

FEB 13 2005

PTO/SB/08A (07-05)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if Known

Application Number 10/759,341
Filing Date January 16, 2004
First Named Inventor Anthony C. Zuppero
Art Unit 1753
Examiner Name Alan D. Diamond
Attorney Docket Number 22122878-75

Sheet 1 of 2

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/JB/		US- 5,362,975	11-1994	von Windheim et al.	
		US- 5,780,727	07-1998	Gimzewski et al.	
		US- 5,124,610	06-1992	Conley et al.	
		US- 3,483,040	12-1969	Parkins	
		US- 3,916,338	10-1975	Jensen et al.	
		US- 2004/0182431	09-2004	Zuppero et al.	
		US- 5,404,712	04-1995	Feu et al.	
		US- 6,916,451	07-2005	Zuppero et al.	
		US- 6,944,202	09-2005	Zuppero et al.	
/JB/		US- 2005/0189011	09-2005	Zuppero et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
/JB/		EP 0713089	05-1996	Biosensor Laboratories		
/JB/		DE 37 43 399 A1	07-1989	Siemens AG		
/JB/		JP 2-264101	10-1990	Fukushima		

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Signature

/Jeffrey Barton/

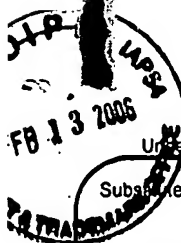
Date
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06/01/2007

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Sheet	2	of	293	Application Number	10/759,341
				Filing Date	January 16, 2004
				First Named Inventor	Anthony C. Zuppero
				Art Unit	1753
				Examiner Name	Alan D. Diamond
				Attorney Docket Number	22122878-75

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
/JB/		Prieur et al., "Sound Amplification by Stimulated Emission of Radiation in an Amorphous Compound," Europhysics letters, 24 (5) (1993), pp. 409-414.	
		Zavtrok et al., "SASER (Sound Amplification by Stimulated Emission of Radiation)," April 1997, pp. 406-414	
		Surowiak et al., "Structure and Certain Physical Properties of BaTiO3 Thin Films with Diffused Phase Transition," XP-002355326, 1 page	
		Taylor et al., "Phonon Focusing in Solids," June 1969, pp. 416-420	
		Tobias et al., "Fast chemical Sensing with Metal-insulator Silicon Carbide Structures," June 1997, pp. 287-289.	
		Lloyd Spetz et al., "High Temperature Sensors Based on Metal-Insulator-Silicon Carbide Devices," January 1997, pp. 493-511.	
/JB/		Benson, "Sodium chemiluminescence in the Na+N2O and Na-catalyzed N2O+CO Reactions," September 1976, pp. 3879-3885.	

Examiner Signature	/Jeffrey Barton/	Date Considered	06/01/2007
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Application Number	10/759,341
Filing Date	January 16, 2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 2 of 2 *JS***U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No.	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-			
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		US-			
		US-			
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Patent Document Country Code ³ Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
/JB/		JP 63-42181	02-23-1988	Beibcock Hitachi KK		

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/Jeffrey Barton/

Date
Considered

06/01/2007

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ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

**Title of
Invention****IMPROVED DIODE ENERGY CONVERTER FOR CHEMICAL
KINETIC ELECTRON ENERGY TRANSFER**

Application Number : 10/759341
 Confirmation Number: 7473
 First Named Applicant: Anthony Zuppero
 Attorney Docket Number: 22122878-75
 Art Unit: 1753
 Examiner: ALAN DIAMOND
 Search string: (3925235).pn



Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.

US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
/JB/	1	3925235	1975-12-09	Lee			

Signature

Examiner Name	Date
/Jeffrey Barton/	06/01/2007

3/17/05

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

**Title of
Invention****IMPROVED DIODE ENERGY CONVERTER FOR CHEMICAL
KINETIC ELECTRON ENERGY TRANSFER**

Application Number : 10/759341
 Confirmation Number: 7473
 First Named Applicant: Anthony Zuppero
 Attorney Docket Number: 22122878-75
 Art Unit:
 Examiner:
 Search string: (6172427).pn



Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.

US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
/JB/	1	6172427	2001-01-09	Shinohara et al.			

Remarks

Note: Remarks are not for responding to an office action.

This information disclosure statement is being filed under 37 C.F.R. 1.97(b)(3), before the mailing date of a first Office action on the merits.

Signature

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/Jeffrey Barton/	06/01/2007

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if K_n wn

Application Number	TBA
Filing Date	JANUARY 16, 2004
First Named Inventor	Anthony C. Zuppers
Art Unit	TBA
Examiner Name	TBA
Attorney Docket Number	22122878-75

Sheet	1	of	3
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U. S. PATENT DOCUMENTS

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
/JB/	A	US-4045359	08-1977	Fletcher et al.	
	B	US-4407705	10-1983	Garscadden et al.	
	C	US-5932885	08-1999	DeBellis et al.	
	D	US-6114620	09-2000	Zuppero et al.	
	E	US-6218608-B1	04-2001	Zuppero et al.	
	F	US-6222116-B1	04-2001	Zuppero et al.	
	G	US-6268560-B1	07-2001	Zuppero et al.	
	H	US-2001/0018923-A1	09-2001	Zuppero et al.	
	I	US-6327859-B1	12-2001	Zuppero et al.	
	J	US-2002/0017827-A1	02-2002	Zuppero et al.	
	K	US-2002/0121088-A1	09-2002	Zuppero et al.	
/JB/	L	US-2002/0196825-A1	12-2002	Zuppero et al.	

FOREIGN PATENT DOCUMENTS

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Compl to If Known	
				Application Number	TBA
				Filing Date	January 16, 2004
				First Named Inventor	Anthony C. Zuppero
				Group Art Unit	TBA
				Examiner Name	TBA
Sheet	2	of	3	Attorney Docket Number	22122878-75

[illegible]

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				Application Number	TBA
				Filing Date	January 16, 2004
				First Named Inventor	Anthony C. Zuppero
				Group Art Unit	TBA
				Examiner Name	TBA
				Attorney Docket Number	22122878-75
Sheet	3	of	3		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 52

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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Sheet 2 of 62

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JS		US- 20020070632	06-2002	Zuppero et al.	
		US- 4651324	03-1987	Prein et al.	
		US- 5337329	08-1994	Foster, Jack	
		US- 4756000	07-1988	Macken, John A.	
		US- 5999547	12-1999	Schnelder et al.	
JS		US- 5048042	09-1991	Moser et al.	
		US- 5587827	12-1996	Hakimi et al.	
JS		US- 4012301	03-1977	Rich et al.	
		US- 5470395	11-1995	Yater et al.	
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Sheet 3 of 62

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Application Number	10/759,341
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First Named Inventor	Anthony C. Zuppers
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 4 of 62

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Application Number 10/759,341
 Filing Date 1/16/2004
 First Named Inventor Anthony C. Zuppero
 Art Unit 1753
 Examiner Name Alan D. Diamond
 Attorney Docket Number 22122878-75

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code* (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
93		US- 4,634,641	01-06-1987	Nozik	
		US- 5,488,231	01-30-1996	Kwon et al.	
		US- 5,757,833	05-26-1998	Arakawa et al.	
		US- 5,917,193	06-29-1999	Brown	
		US- 6,067,309	05-23-2000	Onomura et al.	
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Examiner Initials	Cite No.	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code* (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

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		Filing Date	1/16/2004
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1753
		Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75		

Sheet 6 of 62

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
93		HARRISON, P. et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, Institute of Microwaves and Photonics, University of Leeds, U.K., pp. 1-84 (Date unknown)	
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93		SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 7, No.22 (2001)	

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Sheet 1 of 62

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 8 of 62

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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93		VALDEN et al., Onset of Catalytic Activity of Gold Clusters on Titania with the Appearance of Nonmetallic Properties, Science, Vol. 281 (1998)	
		BONDZIE et al., Oxygen Adsorption on Well-Defined Gold Particles on TiO ₂ (110), J. Vac. Sci. Technol. A17(4) (1999)	
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Sheet 1 of 62

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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93		CORCELLI et al., Vibrational Energy Pooling in CO on NaCl(100): Methods, Journal of Chemical Physics, Vol. 116, No. 18 (2002)	
93		FIERZ et al., Time-Resolved 2-Photon Photoionization on Metallic Nanoparticles, Appl. Phys. B 68 (1999); http://www.flp.physik.uni-essen.de/aeschlimann/abstractct.htm#6	
		BEZANT et al., Intersubband Relaxation Lifetimes in p-GaAs/AlGaAs Quantum Wells Below the LO-Phonon Energy Measured in a Free Electron Laser Experiment, Semicond. Sci. Technol., 14 No. 8 (1999)	
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Already cited 93

Already cited 93

Examiner Signature	Date Considered
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Sheet 10 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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<u>JS</u>		CHOI et al., Ultrafast Carrier Dynamics in a Highly Excited GaN Epilayer, Physical Review B, Vol. 63, 115315 (2001)	
<u>JS</u>		DIEKHONER et al., Parallel Pathways in Methanol Decomposition on Pt(111), Surface Science 409, pp. 384-391 (1998)	
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<u>JS</u>		de PAULA et al., Carrier Capture via Confined Phonons in GaAs-AlGaAs Multiple Quantum Wells, Second. Sci. Technol. 9, pp. 730-732 (1994)	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 11 of 62

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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93		ENGSTROM et al., Comparing the Vibrational Properties of Low-Energy Modes of a Molecular and an Atomic Adsorbate: CO and O on Pt(111), Journal of Chemical Physics, Vol. 112, No. 4 (2000)	
93		GLAVIN et al., Generation of High-Frequency Coherent Acoustic Phonons in a Weakly Coupled Superlattice, Applied Physics Letters, Vol. 74, No. 23 (1999)	
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Sheet 12 of 62**Complete if Known**

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Filing Date	1/16/2004
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Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122678-75

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**INFORMATION DISCLOSURE
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Sheet 13 of 62

Complete if Known	
Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS		
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published
AB		KRAUSS et al., Coherent Acoustic Phonons in a Semiconductor Quantum Dot, Physical Review Letters, Vol. 79, No. 25 (1997)
		LUGLI et al., Interaction of Electrons with Interface Phonons in GaAs/AlAs and GaAs/AlGaAs Heterostructures, Semicond. Sci. Technol. 7 (1992)
		NIENHAUS et al., Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, Physical Review Letters, Vol. 82, No. 2 (1999)
		MULET et al., Nanoscale Radiative Heat Transfer Between a Small Particle and a Plane Surface, Applied Physics Letters, Vol 78, No. 19 (2001)
		NIENHAUS et al., Direct Detection of Electron-Hole Pairs Generated by Chemical Reactions on Metal Surfaces, Surface Science 445, pp. 335-342 (2000)
		NIENHAUS, Hermann, Electronic Excitations by Chemical Reactions on Metal Surfaces, Surface Science Reports 45, pp. 1-78 (2002)
		NOLAN et al., Translational Energy selection of Molecular Precursors to Oxygen Adsorption on Pt(111), Physical Review Letters, Vol. 81, No. 15 (1998)
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		NOLAN et al., Direct Verification of a High-Translational-Energy Molecular Precursor to Oxygen Dissociation on Pd(111), Surface Science 419 (1998)
AB		OGAWA et al., Optical Intersubband Transitions and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells, Physical Review Letters, Vol. 88, No. 11 (2002)

Examiner Signature	Date Considered
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**INFORMATION DISCLOSURE
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Sheet 14 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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93		PLIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, Physical Review B, Vol. 58, No. 4 (1998)	
		PAGGEL et al., Quantum-Well States as Fabry-Perot Modes in a Thin-Film Electron Interferometer, Science, Vol. 283 (1999)	
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		SUN et al., Phonon-Pumped SiGe/Si Interriband Terahertz Laser, pp. 1-11	
		BOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (2001)	
93		QU et al., Long-Lived Phonons, Physical Review B, Vol. 48, No. 9 (1993)	

Already cited
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Examiner Signature	Date Considered
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Sheet 15 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART LITERATURE DOCUMENTS

Examiner Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
93		PONTIUS, et al., Size-Dependent Hot-Electron Dynamics in Small Pdn-Clusters, Journal of Chemical Physics, Vol. 115, No. 22 (2001)	
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		TRIPA et al., Surface-Aligned Photochemistry: Aliming Reactive Oxygen Atoms Along a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	
		TRIPA et al., Surface-Aligned Reaction of Photogenerated Oxygen Atoms with Carbon Monoxide Targets, Nature, Vol. 398 (1998)	

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Sheet 6 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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93		TRIPA et al., Kinetics Measurements of CO Photo-Oxidation on Pt(111), J. Chem. Phys. 105 (4) (1996)	
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SignatureDate
Considered

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**INFORMATION DISCLOSURE
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Sheet 17 of 62

Complete If Known	
Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS		
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93	11	WITTE et al., Low Frequency Vibrational Modes of Adsorbates, Surface Science, No. 1362 (2002)
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	Application Number	10/759,341
	Filing Date	1/16/2004
	First Named Inventor	Anthony C. Zuppero
	Art Unit	1753
	Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75	

Sheet 18 of 62**OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS**

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		HARRISON et al., The Carrier Dynamics of Far Infrared Intersubband Lasers and Tunable Emitters, www.ee.leeds.ac.uk/homes/ph/	
		HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
		HARRISON et al., Room Temperature Population Inversion in SiGe TASER Devices	
		HARRISON et al., Population Inversion and Gain Estimates for a Semiconductor TASER,	
		SUN et al., Phonon Pumped SiGe/Si Intersubband Terahertz Laser	
		SOBEF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, vol. 79, No. 22 (2001)	
		SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GeAs/AlGaAs Multiple Quantum Well Structures, Appl. Phys. Letter 66 (25) (1995)	
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**INFORMATION DISCLOSURE
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Sheet 19 of 62

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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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93		HYH et al., Methanol Oxidation of Palladium Compared to Rhodium at Ambient Pressures as Probed by Surface-Enhanced Raman and Mass Spectroscopies, <i>Journal of Catalysis</i> , Vol. 174 (2) (1998)	
93		GUMHALTER et al., Effect of Electronic Relaxation on Covalent Adsorption Reaction Rates, <i>Physical Review B</i> , Vol. 30, Issue 6 (1984)	
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		PHIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, <i>Physical Review B</i>, Vol. 58, Issue 4 (1998)	
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		TRIPA et al., Surface-Aligned Photochemistry: Aiming Reactive Oxygen Atoms Along a Single Crystal Surface, <i>The Journal of Chemical Physics</i>, Vol. 112, Issue 5 (2000)	
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93		DEKORSY et al., Coherent Acoustic Phonons in Semiconductor Superlattices, <i>phys. stat. sp.</i> , (b) 215, p 425-430 (1999)	

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Sheet 20 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS					
Examiner Initials ¹	Cite No. ²	Document Number Number - Kind Code ³ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
<u>JS</u>		us. 6,119,631	09-19-2000	Anderson	
<u>JS</u>		us. 5,408,967	04-25-1995	Foster	
<u>JS</u>		us. 5,293,837	03-15-1994	Meyer	
		us. 2002/0121088	9-5-2002	ZUPPERO et al.	
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FOREIGN PATENT DOCUMENTS					
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 2 of 62

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zupparo
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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Sheet 22 of 62

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppers
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet

23

23

12

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examinee Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the literature (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Page
		DIRKHONER, L., et al.; "Parallel pathways in methanol ... Pt(111)"; Surf. Sci. 409 (1998) pp 384-391	
93		DIESING, D., et al.; "Aluminum oxide tunnel junctions..."; Thin Solid Films, Vol. 342 (1-2) (1999) pp. 282-290	
		DIMATTEO, R. S., et al.; "Enhanced photogeneration of carriers in vacuum gap"; Appl. Phys. Lett. (2001) 79, pp. 1894-1896	
93		DIMATTEO, R. S., et al.; "Introduction to and Experimental Demonstration of Micron-gap ThermoPhotoVoltaics"; http://www.thermopv.org/37DiMatteo.html (abstract only) (Date unknown)	
1		DOGWILER, Urs, et al.; "Two-dimensional ... catalytically stabilized ... lean methane-air ..."; Combustion and Flame, (1999), 116(1,2), pp 243-258	
1		ECHENIQUE, P. M., et al.; "Surface-state electron dynamics in noble metals"; Prog. Surf. Sci., 67, (2001), pp 271-283	
1		ENDO, Makoto, et al.; "Oxidation of methanol ... on Pt(111) ..."; Surf. Sci. 441 (1999) L931-L937, Surf. Sci. Letters	
93		FAN, C. Y., et al.; "The oxidation of CO on RuO2 ..."; J. Chem. Phys. 114, (2001), pp. 10058-10062	
		FARR, W.S., et al.; "Electron thermalization in gold"; Phys. Rev. B (1992) 46 pp. 13592-13593	

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**INFORMATION DISCLOSURE
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Sheet 24 of 62

Complete if Known	
Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	72
93		GEE, Adam T., et al.; "The dynamics of O2 adsorption on Pt(533)..."; J. Chem. Phys.(2000) 113, pp. 10333-10343	
		GERGEN, Brian, et al.; "Chemically Induced Electronic Excitations at Metal Surfaces"; Science, 294, (2001) pp. 2521-2523	
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		GUMBALTER, B., et al.; "Effect of electronic relaxation on adsorption-reaction rates"; Phys. Rev. B (1984) 30 pp. 3179-3190	
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		HESS, S., et al.; "Hot Carrier Relaxation - Phonon Scattering in GaN"; http://www.physics.ox.ac.uk/rtaylor/images/hot%20carrier%20poster.pdf	
93		HO, Wilson; http://www.lasp.cornell.edu/lasp_data/wilsonho.html (Date unknown)	

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**INFORMATION DISCLOSURE
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Sheet 25 of 62

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppers
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS		
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		HOFMEIER, J. et al.; "Electron and lattice dynamics ... optical excitation of metals"; Chemical Physics, 251 (2000) pp 237-258
93		HONKALA, Karolina, et al.; "Ab initio study of O2 precursor states on the Pd(111)"; J. Chem. Phys. (2001) 115, pp. 2297-2302
93		HOU, H.; Y., et al.; "Chemical Interactions of Super-Excited Molecules on Metal Surfaces"; http://www2.chem.ucsb.edu/~wodtke/papers/dani.pdf (Date unknown)
93		HOU, H., et al.; "Direct multiquantum relaxation of highly vibrationally excited NO ..."; J. Chem. Phys., 110, (1999) pp 10660 - 10663
		HUANG Y., et al.; "Observation of Vibrational Excitation and Deexcitation for NO from Au(111) ..."; Phys. Rev. Lett., 84, (2000) pp 2985 - 2988
		HUANG, Yuhui, et al.; "Vibrational Promotion of Electron Transfer"; SCIENCE, VOL 290, 6 OCTOBER 2000, pp 111 - 113
93		IBH; "NanoLED overview"; http://www.ibh.co.uk/products/light_sources/nanoled_main.htm (Date unknown)
93		IBH; "Red picosecond laser sources"; http://www.ibh.co.uk/products/light_sources/nanoled/heads/red_laser_heads.htm (Date unknown)
93		IFTIMIA, Ilana, et al.; "Theory ... scattering of molecules from surface"; Phys. Rev. B (2002) 65, Article 125401

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**INFORMATION DISCLOSURE
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Sheet 26 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Y ²
JS		ISHIKAWA, Yasuyuki, et al.; "Energetics of H ₂ O dissociation and COads+OHads reaction - Pt."; Surf. Sci. preprints SUSC 12830, 27 April 2002	
JS		JOHNSON, R. Collin; "Molecular substitution ...terahertz switch arrays"; EE Times, (04/10/00, 3:35 p.m. EST) http://www.eet.com/story/OEG20000410S0057	
JS		KAO, Chia-Ling, et al.; "The adsorption ... molecular carbon dioxide on Pt(111) and Pd(111)"; Surf. Sci., (2001) Article 12570	
JS		KATZ, Gil, et al.; "Non-Adiabatic Charge Transfer Process of Oxygen on metal Surfaces"; Surf. Sci. 425(1) (1999) pp. 1-14	
		KAWAKAMI, R. K., et al.; "Quantum well states in copper thin films"; Nature, 398, (1999) pp 132-134	
JS		KOMEDA, T., et al.; "Lateral Hopping of Molecules Induced by Excitation of Internal Vibration..."; Science, 295, (2002) pp 2055-2058	
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JS		LI, Shengping, et al.; "Generation of wavelength-tunable single-mode picosecond pulses ..."; Appl. Phys. Lett. 76, (2000) pp 3676-3678	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	22	of	62
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Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 28 of 62

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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		NOLAN, P. D., et al.; "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111)"; J. Chem. Phys. 111, (1999), pp 3696 - 3704	
		NOLAN, P. D., et al.; "Translational ... Precursors to Oxygen Adsorption on Pt(111)"; Phys. Rev. Lett., 81, (1998) pp 3179 - 3182	
		OGAWA, S., et al.; "Optical ... and Femtosecond Dynamics in Ag/Tc(100) Quantum Wells"; Phys. Rev. Lett. 88, 116801 (2002)	
		PAGHEL, J. I., et al.; "Quantum Well States as Fabry-Pérot Modes in a ..."; Science, 283, (1999), pp 1709 - 1711	
		PAGHEL, J. I., et al.; "Quasiparticle Lifetime in Ag/Tc(100) Quantum Wells"; Phys. Rev. Lett. (1998) 81, pp. 5632-5635	
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93		RINNEMO, Mats; "Catalytic Ignition and Kinetic Phase Transitions"; 1996; http://www2.lib.chalmers.se/oth/diss/doc/9596/RinnemoMats.html	
93		ROBERTSON, A. J. B.; "Catalysis of Gas Reactions by Metals"; Logos Press Limited; 1970; LC # 79-80936; pp. 1-5, 10, 41; Great Britain, Adlard & son Ltd	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)

Sheet 32 of 62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Examiner Initials*	Cite No. ¹	U. S. PATENT DOCUMENTS		Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY		
		US-0902885	08-1999	DeBellis et al.	
		US-2001/0018923-A1	09-2001	Zuppero et al.	
		US-2002/0121000-A1	09-2002	Zuppero et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet

33

of

62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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JB		REE, J. et al., "Dynamics of Gas-Surface Interactions: Reaction of Atomic Oxygen with Chemisorbed Hydrogen on TUNGSTEN,"	
		Journal of Physical Chemistry, Vol. 101 (#25), pp. 4523 - 4534, June 19, 1997.	
JB		REE, J. et al., "Reaction of atomic oxygen with adsorbed carbon monoxide on a platinum surface," Journal of Chemical	
		Physics, Vol. 104, Issue 2, pp. 742 - 757, January 8, 1996.	
		NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt(111): A molecular beam and electron energy loss spectroscopy study," Journal of Chemical Physics, Vol. 111, No. 8, pp. 3696 - 3704, August 22, 1999.	
		NOLAN, P. D. et al., "Translation Energy Selection of Molecular Precursors to Oxygen Adsorption on Pt (111)," Physical Review Letters, Vol. 81, No. 15, pp. 3179 - 3182, October 12, 1998.	
JB		MURPHY, M. J. et al., "Inverted vibrational distributions from N ₂ recombination at Ru(001): Evidence for a metastable molecular chemisorption well," Journal of Chemical Physics, Vol. 110, No. 14, pp. 6954 - 6962, April 8, 1999.	
JB		KIM, M. S. et al., "Reaction of Gas-Phase Atomic Hydrogen with Chemisorbed Hydrogen Atoms on an Iron Surface," Bull. Korean Chem. Soc., Vol. 18, No. 9, pp. 985 - 994, May 22, 1997.	
JB		BONN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, pp. 1042 - 1045, August 13, 1999. www.sciencemag.org	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 34 of 62**Complete If Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppers
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		"Electron-hole pair creation by reactions at metal surfaces", downloaded from www.aps.org/meet/CENT99/BAPS/abs7S6980001.html American Physical Society Centennial Meeting Program, Atlanta, GA, 20-26 March 1999	
		"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999	
		"The Solarix Guide to Solar Electricity" Solarix Corporation, Inc., Frederick, MD, pp. 66-67, April 1999	
X			

Already
cited

Examiner Signature		Date Considered	
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¹ Unique citation designation number. ² Applicant is to place a check mark here if English language translation is attached.

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PTQ/SB/08A (08-03)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 41 of 62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

[illegible]

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Date Considered

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Applicant's unique citation designation number (optional). ² See Kinda Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

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Substitute for form 1449PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Application Number	10/759,341
		Filing Date	1/16/2004
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1753
		Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75		

Sheet 42 of 62

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.†	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T2
93		MAHAN, G. D. et al., "Multilayer thermionic refrigerator and generator," Journal of Applied Physics, Vol. 83, No. 9, 1 May 1998.	
		STIPS, B. C. et al., "Atomistic studies of O2 dissociation on Pt(111) induced by photons, electrons, and by heating," J. of Chem. Phys., Vol. 107 (16), October 22, 1997, pp. 6443 - 6447.	
		TRIPA, C. E. et al., "Surface-aligned reaction of photogenerated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, 15 April 1999, pp. 591 - 593.	

Examiner Signature		Date Considered	
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† Unique citation designation number. ‡ Applicant is to place a check mark here if English language Translation is attached.

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet

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Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.*	(Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published.	T2
		BORN, M. et al., "Phonon-Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)," Science, Vol. 285, No. 5430, Issue of 13 August 1999, pp. 1042-1045.	
		DAVIS, J. B. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," J. Chem. Phys., 107 No. 3, 15 July 1997, pp. 943-951.	
JS		GADZUK, J. W., "Hot-electron femtochemistry at surfaces: on the role of multiple electron processes in desorption," Chemical Physics, Vol. 251, year 2000, pp. 87-97.	
		GADZUK, J. W., "Resonance-assisted hot electron femtochemistry at surfaces," Physical Review Letters, May 27, 1996, Vol. 76, Issue 22, pp. 4234-4237.	
		GE, N.-H. et al., "Femtosecond Dynamics of Electron Localization at Interfaces," Science, Vol. 279, No. 5348, Issue of 9 Jan 1998, pp. 202-205.	
		GAO, Shiwu, "Quantum kinetic theory of vibrational heating and bond breaking by hot electrons," Physical Review B, Vol. 55, No. 3, 15 Jan 1997-I, pp. 1876-1886.	
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		ENGSTROM, Ulrika and RYBERG, Roger, "Comparing the vibrational properties of low-energy modes of a molecular and an atomic adsorbate: CO and O on Pt (111)," Journal Of Chemical Physics, Vol. 112, No. 4, 22 January 2000, pp. 1959-1965.	

Examiner Signature	Date Considered
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet

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of

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Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppers
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75


OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.*	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
		NOLAN, P. D. et al., "Molecularly chemisorbed intermediates to oxygen adsorption on Pt (111): A molecular beam and electron energy-loss spectroscopy study," Journal Of Chemical Physics, Vol. 111, No. 8, 22 August 1999.	
		NOLAN P. D. et al., "Direct verification of a high-translational-energy molecular precursor to oxygen dissociation on Pt(111)," Surface Science Vol. 419, pp. 1107-1113, December 24, 1998.	
95		OTTO, Andreas et al., "Role of atomic scale roughness in hot electron chemistry," Journal of Physical Chemistry B, Vol. 103, No. 14, April 8, 1999, pp. 2696-2701.	
		BLANK, H. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces," Physical Review B, Vol. 58, No. 4, July 15, 1998, pp. 2191-2206.	
95		SUNG, Yung-Eun et al., "Enhancement of electrochemical hot electron injection into electrolyte solutions at oxide-covered tantalum electrodes by thin platinum films," Journal of Physical Chemistry B., Vol. 102, No. 49, December 3 1998, pp. 9806-11.	
		ZHDANOV, V. P. et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films," Surface Science, Vol. 432 (#3), pp. L599-L603, July 20, 1999.	
		NIENHAUS, H., "Electron-hole pair creation by reactions at metal surfaces," American Physical Society, Centennial Meeting Program, March 20-26, 1999, Atlanta, GA, Session SC33 - Metal Surfaces: Adsorbates. http://www.aps.org/meet/CENT99/BAPS/	
		NIENHAUS, H et al., "Electron-Hole-Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium," Physical Review Letters, Vol. 82, Issue 2, January 11, 1999, pp. 446-449.	

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* Unique citation designation number. * Applicant is to place a check mark here if English language Translation is attached.


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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	45	of	62
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Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

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Signature**

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet

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of

62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number Number (Kind Code) ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
<i>ZB</i>		US-6,537,829	03-2003	Zarling et al.	
<i>ZB</i>		US-6,444,476	09-2002	Morgan, Christopher Grant	
<i>ZB</i>		US-6,399,397	06-2002	Zarling et al.	
<i>ZB</i>		US-6,312,914	11-2001	Kardos et al.	
<i>ZB</i>		US-6,251,687	06-2001	Buechler et al.	
<i>ZB</i>		US-6,238,931	05-2001	Buechler et al.	
<i>ZB</i>		US-6,159,686	12-2000	Kardos et al.	
<i>ZB</i>		US-5,891,856	04-1999	Zarling et al.	
		US-			

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Foreign Patent Document (Country Code) ² Number ³ (Kind Code) ⁴ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 45 of 62

Complete If Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
JS	i.	US-2003/0207331	11-2003	Wilson et al.	
		US-2003/0168307	09-2003	Zuppero et al.	
		US-2003/0100119	05-2003	Weinberg et al.	
		US-2003/0030067	02-2003	Chen, Wei	
		US-2003/0019517	01-2003	McFarland, Erick W.	
	i.	US-2002/0121088	09-2002	Zuppero et al.	
JS	i.	US-2002/0070632	06-2002	Zuppero et al.	
		US-2002/0045190	04-2002	Wilson et al.	
		US-2002/0017827	02-2002	Zuppero et al.	
JS	i.	US-6,700,056	03-2004	Zuppero et al.	
	n.	US-6,649,823	11-2003	Zuppero et al.	
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Examiner Signature		Date Considered	
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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1450.

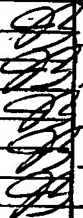
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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Application Number	10/759,341
		Filing Date	1/16/2004
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1753
		Examiner Name	Alan D. Diamond
Sheet <u>49</u> of <u>62</u>		Attorney Docket Number	22122878-75

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.†	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code* (If known)			
		US-5,763,189	08-1998	Buechler et al.	
		US-5,738,410	04-1998	Zarling et al.	
		US-5,698,397	12-1997	Zarling et al.	
		US-5,674,698	10-1997	Zarling et al.	
		US-5,632,870	05-1997	Kucherov, Yan R.	
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FOREIGN PATENT DOCUMENTS						
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		Country Code ² Number ¹ Kind Code ³ (If known)				
JS	→	WO 01/28877A1	04-2001	Zuppero et al.		
		JP-02157012A	06-1990			

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Use as many sheets as necessary)

Sheet 50 of 62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code* (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2002/0121089 A1	09-05-2002	Zuppero et al.	
		US-4,012,301	03-1977	Rich et al.	
		US-5,476,395	11-1995	Yaler et al.	
93		US-2003/0000570 A1	01-2003	Zuppero et al.	
		US-2003/0166307 A1	08-2003	Zuppero et al.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials	Cite No.	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
93		wo 01/29938 A1	4-2001	NeoKismet L.L.C.	

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
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Sheet 5 of 62

Complete if Known

Application Number	10/759,341
Filing Date	1/18/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No. ¹	Document Number Number - Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 6,232,546	US- 12-2001	Dimitroff et al.	
		US- 6,306,101	US- 28/2002	Fragestein et al.	
		US- 5,057,162	10/13/1991	Nelson	
		US- 5,593,509	01/14/1997	Zuppero et al.	
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Sheet 52 of 62

Complete if Known	
Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS		
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher city and/or country where published
93		ACHERMANN, M. et al., "Carrier dynamics around nano-scale Schottky contacts: a femtosecond near-field study", <i>Applied Surface Science</i> 7639 (2002) 1-4.
		AESCHLIMANN, M. et al., "Competing nonradiative channels for hot electron induced surface photochemistry", <i>Chemical Physics</i> , April 15, 1996, pp. 127-141, Vol. 205, Issue: 1-2.
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		BONN, M. et al., "Phonon-Versus-Electron-Mediated Desorption and Oxidation of CO on Ru(0001)", <i>Science</i> , Vol. 285, Number 5430, Issue of 13 Aug 1999, pp. 1042 - 1045.
		CHANG, Y. et al., "Coherent phonon spectroscopy of GaAs surfaces using time-resolved second-harmonic generation", <i>Chemical Physics</i> , 251/1-3, pages 283-308, (2000).
93		CHEN, C. et al., "Hot electron reduction at n-Si/An thin film electrodes", <i>Journal of the Electrochemical Society</i> , Vol. 139, November 1992, pages 3243-3249.
		CHOI, C.K. et al., "Ultrafast carrier dynamics in a highly excited GaN epilayer", <i>Physical Review B</i> , Vol. 63, 115315, 15 March 2001, 6 pages.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 53 of 62

Complete if Known

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
		DEBERNARDI, A. et al., "Antisymmetric Phonon Emissions in Semiconductors from Density-Functional Perturbation Theory", Physical Review Letters, VOL. 73, NUMBER 9, 28 AUGUST 1995, pp 1819 - 1822.	
		DELEATTI, N. et al., "Temperature-dependent electron-lattice thermalization in GaAs", Physical Review B, 15 FEBRUARY 1999-I, Vol. 59, Number 7, pp 4576 - 4579.	
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JB		DRISKILL-SMITH, A. A. G. et al., "The 'nanotriode': A nanoscale field-emission tube", Applied Physics Letters, November 1, 1999, Vol. 75, Issue 18, pp. 2845-2847.	
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		FUNK, S. et al., "Desorption of CO from Ru(001) induced by near-infrared femtosecond laser pulses", Journal of Chemical Physics, Vol. 112, Number 22, 8 June 2000, pages 9888 - 9897.	
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JB		GADZUK, J. W., "Surface Femtochemistry with Fast Lasers and Slow Nanostructures", http://www.csl.nist.gov/div837/837.03/highlite/previous/dietmim.htm (Date Unknown);	
Examiner Signature		Date Considered	

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Sheet 54 of 62

Complete if Known	
Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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Examiner Initials ¹	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
		GAILLARD, F. et al., "Hot electron generation in aqueous solution at oxide-covered tantalum electrodes. Reduction of methylpyridinium and electrogenerated chemiluminescence of Ru(bpy) ₃ 32+", Journal of Physical Chemistry B, Vol. 103, No. 4, January 28, 1999, pages 667-74
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Examiner Signature	Date Considered
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 55 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zupparo
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Y ²
		PLIHAI, M. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces", Physical Review B, July 15, 1998, Vol. 58, Issue 4, pages 2191-2206.	-
		PONTIUS, N. et al., "Size-dependent hot electron dynamics in small Pd-clusters", Journal of Chemical Physics, December 8, 2001, Vol. 115, Issue 22, pages 10479-10483.	-
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Signature

Date

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 56 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		DANIEL J. AUERBACH, <u>Hitting the Surface Softly</u> , www.sciencemag.org, Vol 294 Science, December 21, 2001, pp. 2488-2489.	
		M.D CUMMINGS AND A.Y ELB- ZZABI, <u>Ultrafast impulsive excitation of coherent longitudinal acoustic phonon oscillations in highly photoexcited InSb</u> , 2001 American Institute of Physics, Volume 79, Number 6, August 6, 2001.	
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		H.HOU, Y.HUANG, S.J. GULDING, C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, <u>Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces</u> , www.sciencemag.org, Vol 284, June 4, 1999, pgs. 1647-1650	
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93		XIAOFENG, FAN, GEBHONG, CHRIS LABOUNTY, AND BOWERS, JOHN E., CROKE, EDWARD, AHN, CHANNING C., HUXTABLE, SCOTT, MAJUMDAR, ARUN, SHAKOURI, ALI; <u>SiGe/Si superlattice microcoolers</u> ; Applied Physics Letters, Volume 78, Number 11, 12 March 2001, Pg: 1580-1582.	
		FRIEDMAN, L., SUNG, C., SORER, R.A.; <u>SiGe/Si THz laser based on transitions between inverted mass light-hole and heavy-hole subbands</u> ; Applied Physics Letters, Volume 78, Number 4, 22 January 2001; Pg: 401-403.	

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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Application Number	10/759,341
		Filing Date	1/16/2004
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1753
		Examiner Name	Alan D. Diamond
Sheet <u>57</u> of <u>62</u>	Attorney Docket Number	22122878-75	

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	7 ²
		HARRISON, P., SOREF, R.A.; Population-inversion and gain estimates for semiconductor TASER.	
		HARRISON, P., SOREF, R.A.; Room temperature population inversion in SiGe TASER design.	
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Examiner Signature	Date Considered
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Sheet 58 of 62**Complete if Known**

Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published	T ²
		H. NIEHAUS et al., "Direct detection of electron-hole pairs generated by chemical reaction on metal surfaces", Surface Science 445 (2000), Pages 3350342.	
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Application Number	10/759,341
Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

Sheet 59 of 62**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

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		G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/AlGaAs Superlattices", Applied Physics Letters, Volume 78, Number 22, Pages 3520-3522.	
		V. P. ZHDANOV et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Science 432 (1999), Pages L599-L603.	
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		G. SUN, R.A. SORER, J.B. KHURGIN; "Phonon Pumped SiGe/Si Interminiband Terahertz Laser"	

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Sheet 60 of 62**Complete if Known**

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Attorney Docket Number	22122878-75

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<u>JS</u>		P. ARMOUR et al., "Hot-electron transmission through metal-metal interfaces: a study of Au/Fe/Au trilayers in GaAs substrates", Applied Surface Science 123/124 (1998), Pages 412-417.	
		C.D. BEZANT et al., "Interband relaxation lifetimes in p-GaAs/AlGaAs quantum wells below the LO-phonon energy measured in a free electron laser experiment", Vacuum Solutions Online, Semicond. Sci. Technol. 14 No. 8 (August 1999) L25-L28, PII: S0268-1242(99)03669-X	
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Filing Date	1/16/2004
First Named Inventor	Anthony C. Zuppero
Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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U. S. PATENT DOCUMENTS					
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9/3		US- 6,114,620	09-05-2000	Zuppero et al	
		US- 5,641,585	01-24-1997	Lessing et al	
9/3		US- 5,593,509	01-14-1997	Zuppero et al	
		US- 4,193,799	12-27-1988	Goldstein et al	
		US- 3,694,770	09-1972	Burwell et al	
		US- 3,025,235	12-1975	Lee, Vin Jang	
		US- 4,045,359	08-1977	Fletcher et al	
		US- 4,407,705	10-1983	Garscadden et al	
		US- 5,048,042	08-1994	Moser et al	
		US- 6,114,620	08-2000	Zuppero et al	
		US- 6,248,608	04-2001	Zuppero et al	
		US- 6,222,116	04-2001	Zuppero et al	
		US- 6,268,560	07-2001	Zuppero et al	
		US- 2001/0048923	09-2001	Zuppero et al	
		US- 6,327,859	12-2001	Zuppero et al	
		US- 2002/0017827	02-2002	Zuppero et al	
		US- 2002/0196825	12-2002	Zuppero et al	
		US- 2002/0196825	01-2003	Zuppero et al	
		US- 6,640,823	11-2003	Zuppero et al	

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Sheet 62 of 62

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Art Unit	1753
Examiner Name	Alan D. Diamond
Attorney Docket Number	22122878-75

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